



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,424	03/16/2004	Ruizhong Hu	W9570-01	2056
30633 7590 08/18/2008 W.R. GRACE & CO.-CONN. 7500 GRACE DRIVE COLUMBIA, MD 21044				
EXAMINER BRUNSMAN, DAVID M				
ART UNIT		PAPER NUMBER		
1793				
MAIL DATE		DELIVERY MODE		
08/18/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/801,424

Applicant(s)

HU ET AL.

Examiner

David M. Brunsmann

Art Unit

1793

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 and 31-71 is/are pending in the application.
- 4a) Of the above claim(s) 45-71 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 and 31-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-29 and 31-71 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/08)
Paper No(s)/Mail Date 20080428
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Applicant's response filed 29 April 2008 has been carefully considered. No amendments to the claims were made. Claims 1-29 and 31-71 are pending, of which claims 45-71 have been withdrawn from consideration.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-22, 25-29 and 31-39 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nakaoka (US 5686374).

Nakaoka discloses a catalyst containing a plurality of particles comprising zeolite Y having a unit cell size similar to the instant claims, including the forms HY and USY; alumina and zinc oxide. See the abstract. The zeolite contains less than 0.5 wt% Na₂O. In the catalyst of examples 4 and 6, for instance, including 75% alumina, where the zeolite comprises 15% of the composition the amount of Na₂O would be about 0.075%

which anticipates the amount of Na₂O recited in the instant claims 2-7, 29 and 33-36.

There is no disclosed Na₂O in the remaining components of the composition of the reference. Nor, is there evidence of record that despite the lack of any disclosure of significant Na₂O content, one of ordinary skill in the art would have reason to assume the other components of the reference include a significant amount of Na₂O.

Overlapping ranges have been held to establish *prima-facie* obviousness. See MPEP 2144.05. The reference does not describe that the alumina/zinc oxide components as containing Lewis acid sites. However, these materials are the same as the presently claimed components and therefore would be expected to have the same properties including Lewis Acid sites. Applicant has presented no evidence that the prior art product cannot be maintained in a fluidized state, larger particles simply requiring correspondingly more powerful gasflow.

Applicant's response arguing that the composition of the reference is excluded from the instant claims by the limitation that it be "capable of being maintained in a fluidized state within a fluid cracking catalyst unit" has been carefully considered. The claims must be construed consistent with their broadest reasonable interpretation. The "Fluidization Engineering" document cited by applicant demonstrates that compositions of particle sizes similar to that of Nakaoka fall within the scope of "fluidizable" as falling within the classification of "Geldart D" particles which are "difficult to fluidize". Page 79 of the document, nevertheless, teaches various methods by which such particles are fluidized. The instant claims are not limited to the preferred

embodiments of the specification but, must be read to include any particle size that is fluidizable, even if difficultly so.

Claims 23, 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakaoka, as applied above, in view of Chen et al (US 4627911).

The difference between Nakaoka and the instant claims that explicitly recite a particle size is that the examples of Nakaoka recite a particle size of the product composition of 1.6mm. Chen et al (US 4627911) teaches that zeolite catalysts for catalytic cracking of hydrocarbons are generally no smaller than $1/25^{\text{th}}$ of an inch for fixed beds and range from 1-140 microns, with an average particle size of 62 microns in FCC cracking operations at column 1, lines 27-33. It would have been obvious to one of ordinary skill in the art to modify the examples of Nakaoka to a particle size of 62 microns because Chen et al teaches that is most useful for FCC operations.

Applicant's arguments with respect to Chen are not persuasive. In a sense, Chen merely exemplifies a particular case of the general teaching of "Fluidization Engineering"; showing that the efficiency of a fluidized bed operation is maximized when the particles fall within the "Geldart A" classification

Claims 24 and 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakaoka, as applied above, in view of Roberie et al (US 6482315).

The difference between claim 24 and Nakaoka is the use of a rare earth with the zeolite. Column 6, line 15 of Roberie et al teaches that exchanging a rare earth into zeolite Y creates a particularly useful catalytic cracking catalyst. It would have been

obvious to one of ordinary skill in the art to employ a rare earth in a similar manner for that reason.

The difference between claims 40-42 and Nakaoka is the addition of Vanadium to the composition. The Abstract of Roberie et al teaches the addition of Vanadium to zeolitic cracking catalyst to reduce sulfur content. It would have been obvious to one of ordinary skill in the art to add Vanadium to the composition of Nakaoka for that reason.

Contrary to the arguments presented by applicant, physical incorporation of Roberie into the example of Nakaoka is not necessary to support a rejection under section 103. The teaching of Roberie:

The sulfur content of liquid cracking products, especially the cracked gasoline, of the catalytic cracking process is reduced by the use of a sulfur reduction additive comprising a non-molecular sieve support containing a high content of vanadium. Preferably, the support is alumina. The sulfur reduction catalyst is used in the form of a separate particle additive in combination with the active catalytic cracking catalyst (normally a faujasite such as zeolite Y) to process hydrocarbon feedstocks in the fluid catalytic cracking (FCC) unit to produce low-sulfur gasoline and other liquid products that vanadium reduces sulfur content in hydrocarbon processing is properly incorporated into the teaching of Nakaoka.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

This application contains claims 45-71 drawn to an invention nonelected with traverse in the reply filed on 22 December 2006. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David M. Brunsman whose telephone number is 571-272-1365. The examiner can normally be reached on M, Th, F, Sa; 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David M Brunsman/
Primary Examiner, Art Unit 1793

DMB